UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LEO GILLES

Appeal 2006-2793
Application 10/829,536
Technology Center 3600

Decided: March 26, 2007

Before JENNIFER D. BAHR, ROBERT E. NAPPI, and
LINDA E. HORNER, *Administrative Patent Judges*.

BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Leo Gilles (Appellant) appeals under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-28. We have jurisdiction over this appeal under 35 U.S.C. § 6.

Appellant invented a disc brake provided with two brake shoes, an actuator device for actuating at least one of the brake shoes, a force transducer disposed in a force transmission path between the actuator device and the at least one of the brake shoes, and a force limiting arrangement for limiting the maximum force acting upon the force transducer. The three independent claims involved in this appeal read as follows:

1. A disc brake comprising:

a brake disc having two opposite sides;

two brake shoes, which for generating a clamping force are pressable against both sides of the brake disc;

an actuator device for actuating at least one of the brake shoes; and

at least one force transducer disposed in a first force transmission path between the actuator device and at least one of the brake shoes, wherein a maximum component of force acting upon the force transducer upon generating of the clamping force is limited.

26. A disc brake comprising:

a brake disc;

two brake shoes pressable against the brake disc for generating a clamping force;

an actuator for actuating at least one of the brake shoes;

a force transducer arranged between the actuator and at least one of the brake shoes; and

a force limiting assembly for limiting the force acting upon the force transducer upon generation of the clamping force.

27. A disc brake comprising:

a brake disc;

two brake shoes pressable against the brake disc for generating a clamping force;

an actuator for actuating at least one of the brake shoes;

a first force transmission path arranged between the actuator and at least one of the brake shoes;

a force sensing element disposed in the first force transmission path; and

a second force transmission path arranged between the actuator and at least one of the brake shoes, the second force transmission path bypassing the force sensing element.

The Examiner relies upon the following as evidence of unpatentability:

Rinsma	WO 99/37939	Jul. 29, 1999

Appellant seeks review of the Examiner's rejections of claims 1-3 and 7-28 under 35 U.S.C. § 102(b) as anticipated by Rinsma and claims 4-6 under 35 U.S.C. § 103(a) as unpatentable over Rinsma.

The Examiner provides reasoning in support of the rejection in the Final Rejection (mailed July 14, 2005) and Answer (mailed March 24, 2006). Appellant presents opposing arguments in the Brief (filed January 17, 2006) and Reply Brief (filed May 22, 2006).

Appellant does not list the Examiner's rejection of claims 4-6 under 35 U.S.C. § 103(a) as unpatentable over Rinsma as a ground of rejection to be reviewed on appeal (Br. 6). It is apparent from Appellant's statement "all claims 1 to 28 are appealed" (Br. 2), however, that Appellant intends to appeal both rejections set forth in the Final Rejection. We therefore treat the rejection of claims 4-6 under 35 U.S.C. § 103(a) as standing or falling with the rejection of claims 1-3 and 7-28 under 35 U.S.C. § 102(b), so Appellant is not prejudiced by the failure to expressly include the rejection under 35 U.S.C. § 103(a).

THE ISSUES

With respect to independent claim 1, the issue before us is whether the Examiner has established that Rinsma discloses, either expressly or under principles of inherency, that Rinsma's pressure pad 36, 53 and nut/groove connection 39, 39' cooperate to limit "a maximum component of force acting upon the force transducer upon generating of the clamping force" as called for in claim 1. Essentially the same issue is presented with respect to independent claim 26. Specifically, we must decide whether the Examiner has established that Rinsma discloses, either expressly or under principles of

inherency, that Rinsma's pressure pad 36, 53 and nut/groove connection 39, 39' together comprise "a force limiting assembly for limiting the force acting upon the force transducer upon generation of the clamping force" as recited in claim 26. With respect to independent claim 27, the issue to be decided is whether the Examiner has established that Rinsma discloses, either expressly or under principles of inherency, that the arrangement of Rinsma's screw 24, pressure pad 36, 53, piston 35, and nut/groove connection 39, 39' is such that Rinsma's disc brake assembly has "a second force transmission path arranged between the actuator and at least one of the brake shoes, the second force transmission path bypassing the force sensing element" as recited in claim 27.

FINDINGS OF FACT

In Appellant's invention, the reactive force of the brake shoe 12 on the piston 52 is transmitted via a first force transmission path C to act on the force transducer 42. Specifically, the force is transmitted through the elastic diaphragm 62 and oil-filled chamber 64 and acts on the pressure-to-resistance transducer 66 of the force transducer 42 (Specification 8:20-29; 10:4-22). In Appellant's Fig. 1 embodiment, as soon as a predetermined threshold value of reactive force is reached, such that the diameter enlargement 56 of piston 52 abuts the stop formed by diameter reduction 57 of receiver 40, the component of reactive force exceeding the predetermined threshold value is transmitted along a second force transmission path D that bypasses the force transducer. Consequently, the force acting on the force transducer never exceeds the predetermined threshold value (Specification 11:21-30). In other words, the force acting on Appellant's force transducer

is "limited" to a maximum of the predetermined threshold value at which the piston diameter enlargement abuts the stop formed by the receiver diameter reduction. Any force exceeding the predetermined threshold value will be transmitted along a second force transmission path that bypasses the force transducer. Appellant's Fig. 4 embodiment works similarly except that the predetermined threshold force value is reached when the piston 52 has been displaced far enough to the left in the direction toward the force transducer 42 that the end face 78 of the piston 52 no longer projects beyond the ends of receiver 40 and mounting 44 (Specification 13:10-25).

Rinsma is directed to actuators for disc brakes and seeks to alleviate or circumvent the problems related to transverse or radial loadings on the screw (Rinsma 1:20-28). Rinsma addresses this problem by providing a resilient pressure pad 36, 53 through which the screw 24 and actuating member (piston 35) engage one another to transfer the required actuating force from the screw to the piston (Rinsma 1:28-31; 5:18-24). In Rinsma's Fig. 3 embodiment, the pressure pad 36, 53 has an internal space 52 connected to a measuring channel 51, which in turn is connected to a load measuring device 50. The internal space 52 and measuring channel 51 may be filled with a thermal oil that is resistant to high temperatures that may result from friction between the brake pad 5 and brake disc 6 (Rinsma 6:3-15). Rinsma describes the pressure pad 36, 53 as follows:

> [I]ts stiffness in axial direction should be rather high. In particular, the stiffness should be maintained at a level where the required force/displacement relationship still provides the possibility to obtain the desired actuating force.

> On the other hand, said resilient intermediate pressure means is not as stiff as a direct connection between the screw mechanism and the actuating member. This adapted stiffness has the advantage that extreme loadings, which have a certain transverse component or bending moment, are not directly and fully transmitted towards the screw mechanism. The resilient aspect of the force transmission between screw mechanism and actuating member makes these transverse or bending loadings less severe or even absent.

Rinsma 1:31 to 2:9.

As seen in Fig. 3, rotation of nut 22 causes axial translation of screw 24 (Rinsma 5:18-20). Screw 24 engages the head of piston 35 by means of interposed pressure pad 36, 53 (Rinsma 5:27) and, optionally, a ceramic pad 55, which may be arranged between the pressure pad and the head of the piston 35 to thermally insulate the thermal oil (Rinsma 6:13-15). Screw 24 is held non-rotatably, but slidably, with respect to piston 35 by nut/groove connection 39, 39' (Rinsma 5:25-26). Pressure pad 36, 53 is adapted to accommodate misalignment between the axis of piston 35 and screw 24 that might result from braking action in which brake pad 5 tilts somewhat (Rinsma 5:31-33).

PRINCIPLES OF LAW

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

Under principles of inherency, when a reference is silent about an asserted inherent characteristic, it must be clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) (*quoting Hansgirg v. Kemmer*, 102 F.2d 212, 214, 40 USPQ 665, 667 (CCPA 1939).

ANALYSIS

The Examiner's theory in rejecting Appellant's claims is that Rinsma's pressure pad 36, 53 would compress until the nut 39 reaches the end of travel and abuts against the end of the grooves 39', at which point no additional compression of the pad can occur and, therefore, all additional force would bypass the transducer and the force applied to the transducer is limited (Answer 4). The problem with this theory, as pointed out by Appellant (Br. 8, 9, 10, 12, 13), is that Rinsma does not expressly disclose that pressure pad 36, 53 will compress to such an extent that nut 39 will actually abut against the end of grooves 39' and the Examiner has not pointed to any teaching in Rinsma to explain why this would necessarily be the case so as to establish a case of inherency.

To the extent that the Examiner is arguing that some of the force will be transmitted through the outer sections of the walls of Rinsma's pressure pad and through the nut 39 to the piston 35 or to the arm 2 (Answer 4, 5),

presumably through force distribution, and that such force distribution would satisfy the bypass transmission path limitation of claim 27, we do not find this argument persuasive. First, such force distribution would not "bypass" the force transducer 42. Further, that such force distribution occurs is speculative, as Rinsma gives no hint that this is the case.

In light of the above, we conclude that the Examiner has failed to establish that Rinsma discloses, either expressly or under principles of inherency, that Rinsma's pressure pad 36, 53 and nut/groove connection 39, 39' cooperate to limit "a maximum component of force acting upon the force transducer upon generating of the clamping force" as called for in claim 1. We further conclude that the Examiner has failed to establish that Rinsma discloses, either expressly or under principles of inherency, that Rinsma's pressure pad 36, 53 and nut/groove connection 39, 39' together comprise "a force limiting assembly for limiting the force acting upon the force transducer upon generation of the clamping force" as recited in claim 26. Finally, we conclude that the Examiner has failed to establish that Rinsma discloses, either expressly or under principles of inherency, that the arrangement of Rinsma's screw 24, pressure pad 36, 53, piston 35, and nut/groove connection 39, 39' is such that Rinsma's disc brake assembly has "a second force transmission path arranged between the actuator and at least one of the brake shoes, the second force transmission path bypassing the force sensing element" as recited in claim 27.

Accordingly, Appellant has demonstrated that the Examiner erred in rejecting independent claims 1, 26 and 27, as well as claims 2, 3, 7-25, and 28 depending from claims 1, 26, and 27, as anticipated by Rinsma. The

rejection cannot be sustained. The rejection of dependent claims 4-6 as unpatentable over Rinsma falls with the anticipation rejection.

ORDER

The decision of the Examiner to reject claims 1-28 is reversed.

REVERSED

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